

CUBE WHITE BOARD ERASER**CROSS-REFERENCE TO RELATED APPLICATIONS**

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A claim of benefit is made to U.S. Provisional application no. 60/409,242 filed September 10, 2002, the contents of which are incorporated in their entirety.

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BACKGROUND OF THE INVENTION

This invention relates to an eraser of the type that is designed to remove ink and condition white marker boards.

DESCRIPTION OF THE PRIOR ART

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A white marker board is a writing surface that is written upon with felt-tipped pens having non-permanent ink that "dries" on the board. The writing when "erased" becomes a loose dust removed from the board with an eraser or a cloth.

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A white board can be erased with a traditional felt type eraser or a cloth, which was originally designed for use on black slate boards. The use of such a traditional felt eraser designed for slate blackboards is insufficient for white board use. A felt eraser is intended to remove

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white chalk dust from the porous surface of a slate board whereas the white board is a non-porous surface. The eraser holds the chalk dust, with the excess dropping to the chalk tray. The chalk dust drops from the board to the chalk tray

because relatively little static charges are generated during this procedure. The blackboard while still chalk covered is sufficiently dark to allow further writing. The felt eraser re-fills pores in the slate board with chalk
5 dust during the erasing operation, keeping the board "chalked-in" after cleaning.

A new white board has a non-porous finish. The white board surface is normally porcelain, melamine, or plastic. Erasing marker dust from a white marker board using a
10 "standard felt eraser" causes static charges to build up, particularly on plastic surfaces. The marker dust does not easily drop off white boards and when static charges are generated it is harder to remove the dust. The felt eraser when dirty redeposits the dry ink onto clean portions of the
15 white board.

Chemical solvents present in marker pen inks and cleaners attack a white board's surface during its lifetime. The white boards surface goes from a non-porous surface to a porous surface. This leads to "ghosting" where marker pen
20 ink is trapped in the porous surface and dries leaving writing that is not removed when it is conventionally erased.

The ideal white board eraser should address the problems of ghosting caused by worn/porous white board
25 surfaces.

Furthermore, the white board eraser should be easy to use, easy to clean, capable of renewing its dust holding ability; and comfortable to hold.

Further still it should fit on the small trays provided
5 on most white boards.

The Green U.S. Pat. No. 1,852,114 discloses a renewable surface dust cloth composed of a plurality of thin, fibrous, loosely compacted layers. While Green addresses the need to increase dust-holding capacity, the structure disclosed is
10 too weak to function as an eraser surface on a white board for any substantial time.

The Harter U.S. Pat. No. 2,414,872, discloses a blackboard cleaner having a handle with a laminated pad mounted. The pad has a number of plies or sheets of fabric
15 that have been impregnated with a chemical to facilitate cleaning and prevent chalk dust. Harter makes it necessary to clean the plies to obtain any reasonable economic life of the device. The Harter handle would not be satisfactory for white board use as it is awkward and the soiled layers would
20 likely revert to the original configuration.

The Brouty U.S. Pat. No. 2,465,194, Walkama, U.S. Pat. No. 2,702,913, and Oviatt, U.S. Pat. No. 3,613,146, disclose various attempts to increase the dust holding or carrying capacity of a hand held device by providing a roll of
25 material in the handle area. The use of a roll of material

becomes unsatisfactory for white board eraser use when the bulk of such a device is considered.

The Bergquist U.S. Pat. No. 2,708,761, Walkama, U.S. Pat. No. 2,702,913 and Hensley, U.S. Pat. No. 2,693,610,
5 disclose the use of adhesives to hold together adjacent layers of material.

Another commercially available white board eraser holds 25 replacement tissues, and is offered by Schwan Stabilo U.S.A., Inc. This device lacks holding ability, as the
10 spongy foam pad held by the handle fails to keep the fabric layer taut, so that the exposed fabric layer easily becomes loose, develops creases and folds during use. Schwan also requires that it be reloaded with replacement tissues to make it economical for use.

15 Other devices are shown in U.S. Pat. No. Hardey 2,739,334; Macullar U.S. Pat. No. 2,756,549; Scheur et al U.S. Pat. No. 2,870,475; George U.S. Pat. No. 3,199,136; and Cole U.S. Pat. No. 3,376,595, but none of them is satisfactory for white boards.

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OBJECT OF THE INVENTION

The ideal white board eraser should address the problems of ghosting caused by worn/porous white board surfaces.

Furthermore, the white board eraser should be easy to use, easy to clean, capable of renewing its dust holding ability.

An object of the invention is an eraser that is
5 comfortable to hold.

Further still it should fit on the small trays provided on most white boards.

A further object of the invention is to provide a white board eraser that is simple to construct but sturdy and
10 reliable in use.

A further object of the invention is to provide a white board eraser that removes ink dust and conditions the surface of a white board.

An additional object is to provide multiple cleaning
15 surfaces for selection by the user.

SUMMARY OF THE INVENTION

The present invention achieves the above-described objectives by providing an apparatus that has a three
20 dimensional cleaning surface having multiple surfaces that are preferably identical in dimension, which may be selectively chosen for cleaning of a white board surface by the user, and a holder for the user to manipulate the eraser and hold the selected surface in position for cleaning.

25 The holder optionally includes a mechanism for cleaning dust off of the previously used cleaning surfaces that

scrapes the dust from the used surface during the selection process of the cleaning surface.

BRIEF DESCRIPTION OF THE DRAWING

5 Figure 1 displays a six-sided embodiment of replaceable insert for the eraser.

Figure 2 is a holder designed to accept the six-sided insert of figure 1.

Figure 3 is a cross sectional view of a holder.

10 Figure 4 is a retaining strip used to retain insert.

Figure 5 displays an optional scraper to remove dust from previously used sections.

Figure 6 displays a cross-sectional view of the optional scrapper.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The instant invention is drawn to an apparatus to clean white boards from unwanted dry ink. As displayed in FIG. 1 one embodiment of apparatus used to remove the ink is a

20 substantially flat surface 10 having a surface material capable of removing dried ink from a white board. Surface materials that would satisfy this purpose are foams both open and closed cell types, felts, cloths, brush hairs, and other similar material having the ability to remove dried ink from

25 the white board surface without causing abrasive damage. The surface 10 after cleaning the whiteboard traps the dry ink

particles, after repeated usage the efficiency of the surface drops.

As shown in FIG. 1 the surface is contained on a three dimensional surface having at least four or more three dimensional surfaces. A triangle (pyramid), a five-sided object, a cube, and other shapes are possible. The preferred embodiment is a cube, which gives six identical surfaces with the maximum surface area for cleaning without wasted surfaces. As further displayed in FIG. 1 when the cube embodiment is used starting with surface 10 it can be used to clean with opposing surface 15. The surface 10 when combined form a three dimensional object. The core of the three dimensional surfaces may be of similar material or it may be dissimilar. The core 30 can be a hollow or solid object of any material wherein any of the above mentioned surface materials or a combination thereof of the surfaces 10 are affixed.

Figure 2 displays the preferred embodiment of a holder 40 for the three-dimensional eraser in the form of a cube.

Figure 3 displays a cutaway view of the holder showing holder base 45 that has the same dimension of that of surface 10. The holder base 45 contacts edge 42 of retaining surface 48 that is similar to that of retaining surfaces 43 and 44.

Structural adjacent edge 46 joins adjacent retaining surface walls 44 and 48 together. All adjacent edges are joined together to form in the preferred embodiment an open

box wherein the core 30 having an eraser surface 10 fits relatively snugly within the cavity formed by the walls in holder 40. As displayed in FIG. 2 the length of structural adjacent edge 46 must be shorter than that of base edge 42.

5 The difference in length of the two edges relative to each other allows for the core 30 having a white board eraser surface 10 to be projected outside of the boundary of the holder 40.

The core 30 having an eraser surface 10 should be
10 dimensioned so that it may be placed in the holder with relative ease using low force. The core 30 having an eraser surface 10 must be large enough to prevent ejection of the core when the holder 40 when is inverted by gravity or sharp movements of user.

15 Figure 3 and 4 display an optional core 30 having an eraser surface 10 having a holding apparatus 50 which would allow for less dimensional criticality between the core 30 having an eraser surface 10 and the holder 40. This is accomplished through several means either though creating a
20 partial interference fit or through an interaction between surface materials such as between felt and open celled foam. The holding apparatus 50 may be an integral part of the body of holder 40 or it may be affixed in a secondary operation through mechanical (screws, clips, fasteners, etc) or
25 chemical means (adhesives, etc.). The materials for the

holding surface 55 of holding apparatus 50 are selected based upon the material of the surface 10 of the core used to clean the whiteboard.

Figure 5 and 6 displays an optional scrapper 70 having a
5 scrapper edge 72 that scrapes off dust from the previously used eraser surface 10. The scrapper 70 can be open to the atmosphere allowing scrapped dust to be ejected into the air or it can be shaped to direct the scraped dust into a chamber 74 to keep the user from become dirty.

10 The method of using the white board eraser is a follows:
The user grasps the core having a cleaning surface and selects the desired surface for cleaning. The user inserts the core face opposite of that of the desired surface intended for the immediate cleaning into the holder. The
15 user provides force until the core is fully inserted into the holder when the core bottoms out in the holder. The user then proceeds to wipe the board until the surface is ready for use.

The user can continue using that surface for whiteboard
20 erasing until the surface is filled and erasing capacity diminishes. When the user desires to reposition the cleaning surface of the core, he grasps the edge of the core and pulls with enough force to overcome the resistance holding the core in place. The process of removing the core aids in the
25 cleaning process of the previously used surfaces. Previously used surfaces 10 which do not face the holder base 45 during

use (up to four surfaces with a cube) undergo a scrapping action when the core is inserted and extracted. This optional feature increases the chances that a surface capable of cleaning the whiteboard will be present when each of the
5 surfaces 10 have all been used at least once before for cleaning the surface of the board of dried ink. This prolongs the necessity of user from extracting the core and manually cleaning or discarding the core and installing a new core into the holder.

10 Additionally a white board conditioner can be applied to the surface of the eraser such as oil or similar fluids that will fill in the pores of the board. One type of white board condition is an organosilicone fluid that prevents static buildup on the whiteboard during cleaning and thus aids in
15 the removal of the dry ink. Union Carbide produces an excellent antistatic product like Polyalkyleneoxide modified polydimethylsiloxane.

It will be appreciated that the instant specification and claims are set forth by way of illustration and do not
20 depart from the spirit and scope of the instant invention. It is to be understood that the instant invention is by no means limited to the particular embodiments herein disclosed, but also comprises any modifications or equivalents within the scope of the claims.

25 Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is: